

Chapter 5:

Factors in Selecting Food Items and Quantities from the CN Database

Individuals performing nutrient analysis must have knowledge of the foods that are purchased and how they will be prepared and served in order to select the correct database item. The database frequently contains many entries of the same food item, based on the varieties, types, and forms of the food item that can be purchased and on different preparation methods.

Selecting the Correct Food Item from the Database according to Food Category, Variety/Type, and/or Form:

1. Food Category and Variety/Type

Select the food by category and by variety or type, for example:

Beans, green, Italian
Catfish, farm raised
Cherries, sour, red
Corn, yellow

2. Form of Food Purchased

One of the things to consider when selecting the food is the form in which it is purchased:

a. Processing:

For example: ground vs. whole; halves, sliced or diced; whole kernel or cream-style; with or without peel, seeds, skin, bone; etc.

b. Percentage of fat:

For example: ground meat, dairy products have variable amounts of fat

c. Packing medium:

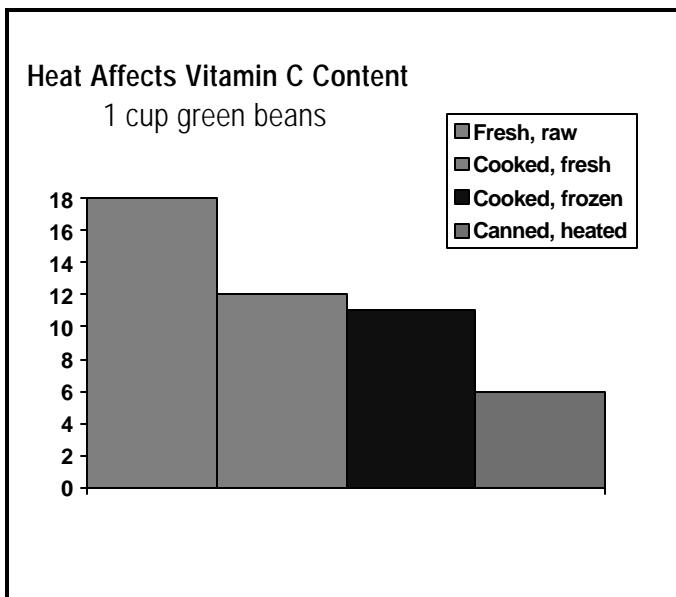
For example: packed in light or heavy syrup, fruit juice or water; with or without salt

Selecting the Correct Food Item Based on the Food Preparation Method:

Matching an ingredient or menu item with the appropriate food listed in the Child Nutrition (CN) Database is essential in determining the correct caloric and nutrient value of a food. The nutrient content of raw foods is different from the nutrient content of cooked foods. The nutritive values in the database reflect the amount of nutrients in the form specified. The foods in the CN Database include foods which are:

- Raw as served
- Raw, then cooked
- Canned, drained or undrained, heated or unheated
- Frozen, then cooked
- Frozen, then heated
- Condensed, then diluted
- Concentrated
- Dehydrated, then reconstituted
- Dried

Nutrient Retention



Heat affects the nutrient content of many foods. The nutrient profiles of database foods described as cooked have been adjusted for the nutrient changes that occur with cooking. For example, the nutritive value of frozen green beans cooked with salt will be different from the nutritive value of canned green beans which have been heated.

The database features a list of nutritive values of foods prepared by various cooking methods. Cooked foods may be listed, for example, as:

- Boiled
- Broiled
- Baked
- Fried

Foods with these descriptions should be selected only when the ingredient is **cooked** before being served.

Selecting the Correct Measure of a Food:

Volume vs. Weight

The unit of measurement selected and entered will depend on how the food is used in the recipe or the menu. When selecting data be sure the correct measure of food is entered, for example, teaspoon, gram, cup, gallon, pound or fluid ounce.

The database contains the nutritive values of food items per 100 gram weights. The software will convert any measure (volume, weight) of a food item to a gram weight and calculate its nutritive value for the recipe ingredient amount or menu item. Equivalent weight to volume conversions is a standard feature of USDA-approved nutrient analysis software.

Units of Measurement

- Select correct measure: weight or volume.
- Software will convert measure to a gram weight and calculate its nutritive value.

In selecting the correct measure of a food, it is critical to know whether the food is to be measured by weight or by volume. **Unless it is specifically designated as fluid ounces (fl. oz.) in the database, any measure**

that is listed as ounces will be a weight measure.

Weight measures include grams, ounces, and pounds.

Volume measures will be listed as teaspoons, tablespoons, fluid ounces, cups, pints, quarts, gallons.

The chart below demonstrates errors that can occur when volume measures are confused with weight measures:

Selecting Correct Measurement		
<u>Menu Items</u>		
½ cup Raisin Bran		
¾ cup Canned Peaches		
1 cup Popcorn		
	Weight (incorrect)	Volume (correct)
Raisin Bran	4 oz. = 356 cal.	1/2 cup = 79 cal.
Peaches	6 oz. = 92 cal.	3/4 cup = 102 cal.
Popcorn	<u>8 oz. = 587 cal.</u>	<u>1 cup = 23 cal.</u>
	1035 calories	204 calories
Note: 4 oz. = ¼ pound (not 1/2 cup)		
6 oz. = 3/8 pound (not 3/4 cup)		
8 oz. = ½ pound (not 1 cup)		
and 1/2 cup = 4 fluid ounces		
3/4 cup = 6 fluid ounces		
1 cup = 8 fluid ounces		

Selecting Items from the CN Database for the “Yield Factor Method” for Recipe Calculations:

All recipes prepared “from scratch” will be entered into the computer using the Yield Factor Method, which is described below:

Yield Factor Method

A method for nutrient analysis of recipes that requires that each recipe ingredient be entered as ready-to-serve or cooked and the amount of each ingredient calculated as a yield from the “as purchased” or raw weight, using the USDA *Food Buying Guide*.

Cooks' Recipes vs. Recipes for Nutrient Analysis

It is important to note that recipes for nutrient analysis and cooks' recipes may be two different things. The Yield Factor Method requires selection of cooked products from the database if the product is cooked before serving. Unless the database meat item has a conversion factor built into it, the weight of the raw meat in a cook's recipe must be converted to the weight of the cooked meat using yield data from USDA's *Food Buying Guide*.

In addition, for nutrient analysis, recipes can be made for single servings, for example 1/2 cup french fries, 1 beef patty, 1 hotdog and bun. The computer is able to convert the nutrients in the single serving recipes to the nutrients in the number of servings that are actually planned or served.

Basic Rules for the Yield Factor Method

- Use the form and portion of the food as served.
- Select raw if not heated or cooked.
- Select cooked if cooked before serving, using the food code for the cooked ingredient.
- Adjust the amount of the ingredient by using a factor for the raw-to-cooked yield or the "as purchased" to the "edible portion."

"As Purchased" vs. "Edible Portion"

The amount of calories and nutrients in a food will vary depending upon the edible portion of the food.

Only the edible portion of a food is listed in the database. The database contains the USDA *Food Buying Guide*. Use the USDA *Food Buying Guide* to convert any **as purchased** weights or measures to **edible portion**. For example, if 10 lbs. of **as purchased** carrots are used to make raw carrot sticks, you must convert the 10 pounds of **as purchased** carrots to the **edible portion** and enter that amount into the computer for nutrient analysis.

For example, the *Food Buying Guide* shows that 1 lb. of "as purchased" or "AP" carrots yields .70 lbs. (70% yield) of "ready-to-cook or serve raw" carrots. Therefore, if a recipe called for 10 pounds of "as purchased" to make 100 1/4 cup servings of raw carrot

strips, you would choose CN Database Item 11124, Carrots, fresh, raw, and would enter a weight of 7 lbs. into the recipe.

Recipes that Require Cooking

Recipes that require cooking are a challenge for nutrient analysis—because the recipes contain raw ingredients, and yet we eat cooked products. Cooking changes the nutrient content, the moisture content, and, very frequently, the fat content.

Rather than simply selecting the food code (the computer item number) for the raw ingredient and entering the amount exactly as stated in the recipe to be prepared, the Yield Factor Method involves using the food code for the cooked ingredient from the database and adjusting the amount of ingredient in the recipe by using a factor for the raw-to-cooked yield. The “cooked codes” and yields will generally reflect the losses or gains in moisture and fat, as well as the effect of cooking on other nutrients.

Raw to Cooked Yields for Meats

For some selected items, the CN Database can convert “raw” meats into the “cooked” product weights and nutritive values. For those items, you would select the “cooked” meat item from the database, and then, depending on the software you are using, you would (1) select a code that indicates that you can enter the raw weight of the meat, or (2) select a measure or amount for that food which contains in its description a reference to “yield after cooking,” “raw to cooked,” “raw yields,” or other language that indicates you may enter a raw weight. For these types of measures, you enter the weight of the raw meat as indicated in the recipe and the computer will calculate the equivalent amount of cooked meat.

For meat items which do not have raw to cooked yields, you must calculate the weight of the meat after cooking to enter into the computer. Use the ***Food Buying Guide*** to determine the edible portion.

The edible portion is the cooked yield of one pound of meat. An edible portion of .74 lb. means that there is a 74 percent cooked yield. Multiply the raw weight of the meat by the percent yield to calculate the cooked

weight of the meat and enter the cooked weight into the computer.

For example, a school district is entering a local recipe for beef stew which call for 21 lbs. of stew meat (the recipe calls for browning the meat and draining the fat). Food service staff would check the USDA ***Food Buying Guide*** for the cooked yield of stew meat (61 percent), calculate the cooked weight, and enter that figure along with the "cooked code" for stew meat. The database item would be 13004, Beef, composite of trimmed retail cuts, cooked. This example is demonstrated below:

Converting Raw Weight of Beef Stew Meat to Cooked Weight	
Example Your recipe calls for 21 lbs. of raw beef stew meat. You need to know the weight of the stew meat after cooking. Information excerpted from the USDA <i>Food Buying Guide</i>	
Food as Purchased	Beef, Stew Meat (composite of trimmed retail cuts)
Purchase Unit	Pound
Additional yield information	1 lb. "As Purchased" = .61 lbs. cooked lean meat
Answer: 21 lbs. x .61 = 12.81 lbs. of cooked beef stew meat	

Exception to "Cooked Meat" Procedure

There is an exception to the rule of choosing a cooked meat item from the database and calculating the cooked meat yield: when you are entering a recipe where the fat will remain in the final product, you must select the raw meat database item and enter the weight of the raw meat into the recipe for analysis.

For example: If you were creating a recipe for Red Beans with Sausage, and the recipe instructions specified to slice the uncooked sausage and add it to the beans during cooking, you would need to select the raw

sausage data and the weight of the raw product, because the fat which would normally have cooked out and been drained off will remain in the final product. (This is a good example of a recipe which you might want to modify, either the cooking method and/or ingredients, to reduce fat and saturated fat.)

Other examples of situations where you would choose the raw meat database item and enter the weight of the raw meat into the recipe for analysis include recipes for soups or stews where raw meat is added to the soup or stew and the fat contained in the raw meat ends up in the final product. However, if the soup or stew is chilled after preparation and the fat is skimmed off the top, it would be appropriate to choose the cooked meat item from the database and enter the cooked weight of the meat.

"As Purchased" vs. "Edible Portion" of Chicken (without bones and or skin)

The "edible portion" and, thus, the nutritive value of a three ounce portion of cooked chicken with the skin and bones will be different from the "edible portion" and the nutritive value of a three ounce portion of cooked boneless, skinless chicken.

If a recipe calls for 25 lbs of raw chicken thighs (4 oz. each) to be baked and served with the skin on, you must convert the 25 lbs. of **as purchased** raw chicken thighs to the equivalent weight of the baked meat and skin only.

Example of Converting Raw Chicken to Cooked Chicken with Skin	
Your recipe calls for 25 lbs. of raw chicken thighs (4 oz. each). You need to know the weight of the edible portion of the cooked chicken meat with skin (without the bones).	
Food as Purchased	Chicken thigh, 4 oz.
Purchase Unit	Pound
Additional yield information	1 lb. "As Purchased" = .52 lbs. cooked chicken with skin

Answer: 25 lbs. x .52 = 13 lbs. of cooked chicken with skin

The *Food Buying Guide* also contains as **purchased to edible portion** yield data for cooked chicken without skin.

Determining Cooked Volume of Dried Pasta

A recipe for Ground Beef and Macaroni calls for cooking the dried pasta in boiling salted water prior to combining it with the other recipe ingredients. This presents a difficult situation for nutrient analysis because the pasta does not absorb the total amount of either the boiling water or the salt during cooking.

This problem was resolved by including pasta that has been prepared with salt in the database. To use this database item, it is necessary to convert the amount of the dried pasta in the recipe to the appropriate amount of cooked pasta, using yield data from the USDA *Food Buying Guide*. The nutrients in the database for the cooked pasta will reflect the water and salt absorbed by the pasta during cooking. Therefore, you will choose the cooked pasta from the database and enter the volume (or weight) of the cooked pasta; the water and salt in the recipe are not entered into the computer for the nutrient analysis.

Example of Converting Dried Weight of Macaroni to Cooked Volume	
Determining cooked volume of 4 lbs. of dried elbow macaroni: from the USDA <i>Food Buying Guide</i>	
Food as Purchased	Dried Elbow Macaroni
Purchase Unit	Pound
Servings per purchase unit	19.5
Serving size or portion	1/2 cup
Answer: 1 lb. = 19.5 x 1/2 cup cooked macaroni = 9.75 cups of cooked macaroni	
4 lbs. x 9.75 cups = 39 cups of cooked macaroni	

However, if the pasta is cooked in and absorbs recipe liquid, the dry pasta would be the appropriate item to select from the database and the dry weight of the pasta would be entered. For example, a recipe for Lasagna with Ground Beef calls for the lasagna noodles to be cooked in the tomato sauce. In this case, the dried pasta would be the correct database item to select and the dry weight of the pasta called for in the recipe would be entered.

Moisture and Fat Loss or Gain in Purchased Prepared Products:

Many purchased prepared products, such as frozen french fries, chicken nuggets, and fish portions, will undergo further preparation in the school kitchen.

This further preparation generally consists of oven heating (bringing a fully-cooked product to the proper serving temperature) but some school districts may deep-fry some of these products. Because oven-heating generally has minimal impact on moisture or fat loss, fully-cooked, prepared food products that are only oven heated do not need adjustment for fat/moisture loss. However, prepared purchased products may have significant moisture loss and fat gain during deep-frying.

There are some database items for purchased prepared products which will reflect moisture loss and fat gains which occur during deep-frying. For example, if the SFA uses basic generic frozen french-fried potatoes and deep fat fries them in commodity vegetable oil, the best selection would be to choose Item 11404, Potatoes, frozen, french-fried, fried in vegetable oil, from the database. The database item would be the best selection (rather than entering data on the french fries you are purchasing and adjusting for moisture loss and fat gain) because the database item already reflects moisture loss and fat absorption.

However, there are unique purchased prepared products which may be deep-fried. Nutrient analysis data that will reflect fat gain upon frying are not available at this time in the CN Database for many of these products. See pp. 69-70, Lesson 7, Data Entry for

Nutrient Analysis, for instructions for creating recipes for fried purchased prepared products.

Fat Gain in Scratch Recipes that are Fried:

The Yield Factor Method of data entry for “from scratch” recipes will not reflect the fat gain if these products are fried.

Because this fat gain must be accounted for, you should not enter these items as recipes, but should choose a database item that is for the fried product. For example, instead of entering a recipe for battered, fried chicken drumsticks, you should choose from the CN Database Item 05067, Chicken; drumstick, meat & skin, cooked, fried, batter.

